

A Quick Guide to Managing Operations with Lithic Soils

Purpose:

For contracts containing the following Yarding/Skidding requirement:

“Lithosol (scab flats) and meadows will not be used as landings and skid trails unless no other location is practical. If use is necessary, disturbance will be kept to a minimum amount of area, preferably at the edge.”

This quick guide is intended to inform to Sale Administrators, Purchasers and Contractors of the measures needed to protect areas of sensitive lithic soils and their associated plant communities during Operations.

Site Identification and Managing Operations:

Lithic or Lithosol are shallow soil layers that form over bedrock. The soil depth is generally 20 inches or less and the underlying bedrock layer is hard enough to make digging by hand impractical.

These lithic soils are intermixed across the Umatilla National Forest and are common within Sale Areas. You will typically find these soils on hilltops and broad plateaus. Due to the shallow soil depth, the plant communities are often limited to small shrubs, grasses and forbs. The result is tree-less, meadow-like openings on the landscape. As a rule of thumb, the shorter the vegetation height, the shallower the soil depth at that particular site.



Photo depicts shallow soil depth over bedrock typical of lithic soils.

These natural openings **appear** to be great locations for landings, skid trails, truck turnarounds, parking etc. due to the ease in which these sites can be developed. Traditionally, the use and disturbance of these areas was standard practice during Operations. Today, the Umatilla National Forest recognizes these shallow soil sites as sensitive to disturbance due their limited recovery/restoration potential and unique plant community associations. As a result, these areas require basic avoidance and protection measures to be implemented during Operations.

During layout, Sale Administrators and Contractors should consult the following table when deciding on site suitability for various ground-based operations. If avoidance is impractical and Operations are proposed/necessary on shallow soils (less than 20” depth), the Forest Service botanist/soils specialist should be consulted **prior** to layout approval.

This table relates to site selection criteria for ground disturbing activity.

Soil Depth	Soil Description	Vegetation Height Indicator	Compaction/Displacement Impacts Affecting Productivity	Restoration Difficulty	Suitability for Ground-Disturbing Operations
<10”	Very Shallow	Ankle Height	Most Likely	Most Difficult	Never
10 - 20”	Shallow	Knee Height	Likely	Difficult	Rarely Acceptable / Avoid
20 - 40”	Moderately Deep	> Knee Height	Somewhat Likely	Somewhat Difficult	Acceptable
40 - 60”	Deep	> Knee Height	Somewhat Likely	Least Difficult	Acceptable
> 60”	Very Deep	> Knee Height	Somewhat Likely	Least Difficult	Acceptable / Preferred

To evaluate site suitability, the soil depth should be determined using a shovel or digging bar. Sample the soil depth every 10’ along a transect through the area proposed for impact. If during sampling, bedrock is struck within 10” of the surface, do not use the site. If the soil depth samples measure between 10 - 20”, contact the Forest Service botanist/soils specialist **prior** to approval.